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## More Florida Rarities

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Recently (Darling, 1961), under the title "Florida Rarities," I described the results of five fern hunting trips to Florida, the first in 1941, and the other four from 1955 through 1958. This sequel describes my later expeditions of 1959 and 1960.

Again I chose November of each year to visit relatives on Longboat Key near Sarasota, but my explorations covered the state from Gainesville to the Florida Keys. In 1959 my first objective was to look up Dr. E. S. Ford, of the University of Florida at Gainesville, to continue our previous year's search for the so-called "Fern Cave," where the St. John brothers had found rare *Aspleniums* identical with, or at least similar to, those at Maynard's Cave at Lecanto, i.e. *A. plenum* and *A. subtile*. At the University herbarium were interesting specimens of these rarities, collected April 15, 1942, with this observation in Edward St. John's handwriting: "Note this *second* station (St. John, 1943, p. 62), Fern Cave, a few miles northeast of Newberry. It is quite important! *Blechnum occidentale* is also found at the entrance."

Since our futile search in 1958 both Dr. Ford and I had done some research in an effort to pinpoint the location of this cave, since local residents knew nothing about it. We finally concluded (from correspondence with a former associate of the St. John brothers who had once visited the spot and from Dr. Ford's study of aerial maps) that the location was nearer High Springs than Newberry. We spent an entire afternoon looking for it and had about given up when Dr. Ford called out, "I think I've found it!" When I joined him, I realized that Fern Cave is in reality

a huge vertical shaft or sink hole of terrifying aspect, which drops sheer off in the middle of a field. A luxuriant growth of the rare *Blechnum occidentale* at the entrance left little doubt that we had found the right place, but further exploration without ropes was out of the question. Far down the face of the perpendicular rock wall we could see unidentifiable ferns. I learned later that when these were collected by a party with the aid of ropes, they proved to be the common *Asplenium abscissum*, with no trace of either *A. plenum* or *A. subtile*. (I have seen pressed specimens of "*A. scalifolium*," which the St. John brothers considered a third Lecanto "endemic," but they appear to be either *A. verecundum* or *A. Curtissii*.)

Journeying south from Gainesville, I encountered two examples of the way in which rare plants are being exterminated by so-called "progress." Dr. Ford had told me where *Ophioglossum crotalophoroides* could be found by the roadside, but upon reaching the general area I realized that road-widening operations had obliterated the entire colony of this little Bulbous Adder's Tongue. Then, at a point south of Ocala, I made my way to the former location of Belleview Cave, one of the few spots where the St. John brothers had found *Asplenium Curtissii*. Nearing the region, I was horrified to see bulldozers in action. Dump trucks were carting material from a thriving rock quarry amidst destruction of the surrounding hammock. Observing a man standing nearby, I asked whether he knew the location of Belleview Cave. He pointed into the midst of the quarrying operations and said that up until two months earlier it used to be at that very spot!

Continuing southward, following Dr. Ford's directions, I visited Cat Hammock, near Sumterville, former haunt of the St. John brothers in their search for rare ferns. Here for the first time I found *Asplenium Curtissii* in the same form which so delighted the oldtime botanists by its luxuriance at Buzzard's Roost and Pineola Grottoes. One plant in particular (with many fronds, growing in rich humus) attained a height of 15 inches or more, the median length designated by Small and other authorities.

This fern is extremely difficult to locate in Cat Hammock. I had attempted to find it on two previous visits, without success.

Friday, November thirteenth, far from being unlucky, turned out to be an extra special red-letter day. I had obtained a room at Lake Panasoffkee in a cabin overlooking the lake. When I awoke, Dr. Ford was waiting to join me, having driven down from Gainesville at an early hour. First, we explored the area north of the Outlet where *Asplenium cristatum* and *A. abscissum* grow together in local profusion. We searched the low boulders carefully, but could see no sign of a hybrid. We revisited Cat Hammock, discovering more *A. Curtissii* in the local sink-holes. Here *A. heterochroum* was also to be seen. Then we continued to Indian Field Ledges, where the *Aspleniums* found during a previous visit were still in evidence. *Asplenium abscissum* and *A. verecundum* were common everywhere, and *A. plenum* was luxuriant on "the ridge," a long low-lying boulder, with *A. Curtissii* less plentiful on rocks to the southwest.

At Battle Slough, just east of the Withlacoochee River, we spent some time searching for the rare filmy fern, *Trichomanes sphenoides*. In view of the northern latitude, this is a most unusual location for this representative of the "filmies." Otherwise, it is known only from the West Indies and Central and South America. The area where we searched was drying out rapidly due to cutting of shade-giving magnolias. However, we finally located a few specimens of this rare fern on moss-covered boulders. There unfortunately appears little chance of ultimate survival—another instance of extermination by the encroachment of civilization.

In mid-afternoon Dr. Ford drove back to Gainesville and I continued to Floral City, it being my intention to inquire about the possibility of visiting Craig's Island in Lake Tsala Apopka over the weekend. Here many years ago the St. John brothers had found *Asplenium cristatum* and a luxuriant form of *A. pumilum* growing together on moss-covered boulders near the water's edge. Once I discussed this with John Beckner of St. Petersburg, horticulturist, student of Florida ferns, and member

of the American Fern Society. He had never visited Craig's Island, nor did he know its location, but suggested that if one could rent a boat and had sufficient time to explore the islands of Tsala Apopka, it might be possible to sight these plants, since they were presumably visible from the lake.

At Floral City a local resident told me he knew the location of Craig's Island, but that the lake was so high because of rains that in all probability the island was flooded. He referred me to a competent guide who might take me on a voyage of exploration on a boat known as an "air sled," a fast method of aquatic transportation. In the late afternoon I got in touch with the owner and suggested going for a tour of the lake during the weekend, but he proved to be unavailable Saturday and Sunday.

"I can take you out right now before dark," he told me, "and that's the only time I could arrange it."

Accepting his invitation on the spur of the moment, I soon found myself skimming over Lake Tsala Apopka at an alarming speed. Right and left turns were a real sensation in this unique craft. The operator sat up front on a high seat with the passenger standing behind him clinging on for dear life! In this manner we roared through saw-grass, weeds, cattails, and aquatic shrubs in amazing fashion. Even with the high water we would sometimes head straight for a brushy area and force our way through with ominous crackling and splintering sounds.

En route I explained to my guide about the rocky terrain of Craig's Island as the St. John brothers described it.

"You probably mean Fowler's Island," he said. "There's no rocks on Craig's."

I insisted that herbarium specimens of the rare ferns were definitely labeled from Craig's, so we bypassed Fowler's and headed for Craig's. Disembarking at the latter, we found that the island had recently been inundated and threaded our way over the mucky surface. I soon realized that our search was hopeless, since no rocks or boulders were to be seen.

As the sun sank low on the horizon, it appeared as if the quest were in vain. My guide asked whether I wanted to make a quick

stop at Fowler's Island on the return trip. Since there was nothing to lose, I agreed. At the island, following a rough jungle path to the rocky point, my guide grumbled at the prevalence of rattlesnakes in the area and kept beating the trail ahead with a club. Just as it was getting dark we reached our destination and I could scarcely believe my eyes! There on the low moss-covered boulders near the water's edge, as described by the old-time botanists, were beautiful specimens of *Asplenium cristatum* and the luxuriant form of *A. pumilum*. It seems that with the passing years the island had changed its name, at least as far as the present generation is concerned!

The next day was as unsuccessful as Friday the thirteenth had proved profitable. Visiting Maynard's Cave at Lecanto, site of the rare *Aspleniums* previously mentioned, I found the cave in poor condition, with little moisture, completely devoid of the interesting ferns. Then, at Chinsegut Hill, near Brooksville, I spent a futile search for *Pityrogramma calomelanos*, the Silver Fern, formerly reported from this region.

North of St. Petersburg, in a marshy area along the main highway, I saw the Carolina Club Moss (*Lycopodium carolinianum*) growing side by side with *Lycopodium cernuum*, the Stag-horn Lycopod. South of Tampa, along the Balm Road, these same two fern allies were in evidence, together with the extremely rare *Dicranopteris flexuosa* (Net Fern) which I had seen on a previous trip (Darling, 1961).

Following a brief visit with my relatives on Longboat Key I drove to Miami, arriving in the midst of a tropical downpour which continued without letup all night. From my motel room it sounded as if giant fire hoses were being turned against the walls. Eleven inches of rain fell within a period of 24 hours—a record, I believe, for this area. Next day the papers featured the headline: "Miami Drown, But Not Out!" Since it was impossible to botanize, I spent most of the time at the University herbarium checking fern locations.

The following day I went to Everglades National Park to join Dr. Frank Craighead, now retired and a volunteer research

worker on the Park staff, in a search for the supposedly locally extinct Fragrant Maidenhair, *Adiantum melanoleucum*. Rumor had it that this plant had been seen recently within the Park boundaries, where it is strictly protected by law (Darling, 1961). A visit to likely hammocks harboring erosion holes favorable to its growth proved fruitless, but Dr. Craighead promised to keep on the lookout for this elusive rarity.

November twenty-first proved to be another red-letter day. With three enthusiasts from the Miami area, C. E. Delchamps, Monroe Birdsey, and C. F. Dowling, I toured the region from South Miami to Naranja, and in the course of a day was shown the following unusually scarce ferns: *Cheilanthes microphylla*, *Ctenitis submarginalis*, *Meniscium serratum*, and *Cheiroglossa palmata* (the Hand Fern). Also, much to my amazement, in a long-overlooked hammock recently discovered by Delchamps near the Plant Introduction Station, there were present in local profusion the following ferns which formerly I had considered nearly extinct: *Asplenium biscayneanum*, *Stenochlaena Kunzeana* (Holly Fern) and the Giant Bracken, *Litobrochia (Pteris) tripartita*.

Late that afternoon I drove to Bonita Springs, above Naples on the Gulf coast, and spent the night at a motel near the Collier-Lee county line. Early the next morning I joined John Beckner, E. M. Shields, John Hall, and Dr. Luer on an expedition into the Big Cypress Swamp, officially designated as Fahkahatchie Cypress, near Copeland. Wading waist deep in an area dominated by stately Royal Palms, we found many unusual epiphytic orchids on the trunks and branches of the trees. Here the Wild Birdnest Fern, *Asplenium serratum*, was abundant. Much scarcer, but occasionally growing as an epiphyte on the trunks of Royal Palms and elsewhere, was the Costate Strap Fern, *Polypodium (Campyloneuron) costatum*. We did not see either *Asplenium auritum* or *Polypodium angustifolium*, the Narrow-leaved Strap Fern, also known from this region.

Before leaving for Florida I had written Dr. Warren H. Wagner, Jr., of the University of Michigan, asking which of the

Florida Aspleniums I should send him in the form of living plants for cytological study in attempting to unravel the mystery of the *abscissum-Curtissii-verecundum* complex and thus perhaps explain the origin of probable hybrids, including the controversial Lecanto Spleenworts. I left before Dr. Wagner had a chance to reply, but during the Big Cypress trip Eddie Shields handed me a letter from C. V. Morton saying that Dr. Wagner was anxious to receive living plants of *all* Florida Aspleniums. Although my trip was now practically over, I had fortunately decided to look for and send him all species obtainable. These included *A. abscissum*, *A. biscayneanum*, *A. cristatum*, *A. Curtisii*, *A. dentatum*, *A. heterochroum*, *A. platyneuron* (var. *bacculum-rubrum*), *A. plenum*, *A. pumilum*, *A. serratum* and *A. verecundum*. I also forwarded a living plant of *A. auritum* from the Big Cypress given me by C. E. Delchamps of the University of Miami. Although most of the above species reached Dr. Wagner safely en route north, a few were frostbitten and badly damaged in the freezing weather of a Michigan autumn, and *A. plenum* and *A. heterochroum* had died from exposure to the cold, necessitating later replacements.

November, 1960, brought to a conclusion my six consecutive years of fern study and exploration in Florida. Very few new species remained to be seen. I did, however, make a point of revisiting Cat Hammock and Indian Field Ledges to collect living specimens of *A. heterochroum* and *A. plenum* for shipment to Ann Arbor to replace those which had perished of frostbite the preceding year. To insure the safe transportation of *A. plenum*, the rarer of the two, I collected sufficient material from Indian Field to employ a "staggered shipment" technique. Five separate packages were sent from different post offices on different dates via various types of mailing—first class, air mail, and parcel post. I was glad to learn that this effort was rewarded by the arrival of at least two living specimens of *A. plenum* in satisfactory condition for cytological study. The single shipment of *A. heterochroum* also arrived safely.

Recent correspondence with Dr. Wagner indicates interesting

developments in this research. It is anticipated that his conclusions will soon be summarized and released for publication—the first scientific study to be made of living Florida *Asplenium*s and their hybrids. These plants were previously unknown cytologically and some have been quite controversial taxonomically. As for the cytology of *A. heterochroum*, that is a story in itself. Material furnished by Dr. Ford and myself provided the basis for an interesting project by Miss Virginia Morzenti<sup>1</sup>, a research student at Ann Arbor. The results should be published in the near future.

At Hillsborough River State Park, near Zephyrhills, I stopped to collect, by permission, the northern form of *Asplenium auritum* which I had seen five years previously (Darling, 1961). But I was doomed to disappointment! Although I was positive about the exact spot where a thriving colony of this intriguing fern used to grow on the stub of a dead live-oak, it was nowhere to be seen. The tree (together with the rare fern) had disappeared, possibly the victim of a hurricane.

En route from Sarasota to Miami I saw a thriving colony of both pinnate and bipinnate forms of *Diplazium esculentum* north of Arcadia in a live-oak hammock along the bank of a stream.

Continuing to the Archbold Biological Station at Lake Placid, I looked up Leonard J. Brass. Since this well known botanist is frequently away on expeditions, especially to New Guinea, I had missed him in previous years. He drove me to Bootheel Creek nearby to see a colony of *Thelypteris unca* growing with *T. palustris* and *Anchistea virginica* (Virginia Chain Fern). That evening Mr. Richard Archbold, President of Archbold Expeditions, affiliated with the American Museum of Natural History,

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<sup>1</sup>Miss Morzenti and Dr. Wagner have published a brief abstract of the results of this study (ASB Bull. 9: 40-41, (April) 1962). Since the completion of Miss Morzenti's work on Dr. Ford's and my plants, further studies of collections of *Asplenium heterochroum* and *A. resiliens* by Dr. Wagner of plants, living and dried, from various localities in the southeastern United States indicate that we have an unusually complicated taxonomic situation here, in which at least one undescribed species, and perhaps more, are present.



invited me to join him and members of the staff at dinner, after which I continued to Miami.

Renewing my acquaintance with Gene Delchamps, the University of Miami chemistry instructor who has made so many unusual discoveries of local ferns in recent years, I accompanied him on an expedition to Key Largo to search for that extreme rarity, *Paltonium lanceolatum*, the Ribbon Fern. Originally listed by Small only from Old Rhodes Key and Elliotts Key, this unique epiphyte was considered "otherwise unknown in our range, but widely distributed in continental and insular tropical America." Following up a rumor that this fern, after being "lost" to science for many decades, had recently turned up in a mangrove swamp on Key Largo, Delchamps located the discoverer and got specific directions how to reach the locality. After fighting our way through almost impassable terrain, later necessitating actually climbing high into the mangrove trees and looking *down* upon the various epiphytic plants, including many kinds of orchids, we finally discovered one small non-fruiting *Paltonium* on a horizontal branch. Extensive search failed to reveal fertile specimens, or in fact, any more Ribbon Ferns at all.

In the Miami area we revisited the previously mentioned hammock near the Plant Introduction Station, only to find that Hurricane Donna earlier in the year had taken its toll. The destruction and damage wrought by this storm were unbelievable. Broken fragments of *Asplenium biscayneanum* and the Holly Fern (*Stenochlaena*) were to be seen here and there amidst the debris. It will take a long time for conditions to return to normal, if indeed a complete recovery is ever made.

In a lime sink near the Homestead Air Base *Selaginella armata* (*S. Eatonii*) was in evidence with its conspicuous mats of delicate light green.

Further to the west we explored what is left of the formerly extensive and beautiful Nixon-Lewis Hammock, gradually being whittled away by field cultivation. Here we searched without success for *Polypodium* (*Campyloneuron*) *latum*, once found here sparingly. Some authorities do not consider this a valid species,

considering it merely a long-stiped form of the common Strap Fern, *Polypodium phyllitidis*.

In regard to that other extreme rarity, the Fragrant Maidenhair, *Adiantum melanoleucum*, which until recently had not been seen for forty or fifty years and was thought to have become extinct, Dr. Craighead had written me that following my visit, after considerable exploration he had finally discovered a few plants in a remote lime-sink within the Park boundaries. However, such was the devastation of Hurricane Donna that nearly all the ferns were destroyed. Two typical fronds broken off by the storm were sent to the National Herbarium in Washington for record purposes. Those that survived physical damage were exposed to direct sunlight following destruction of the shade trees above and were badly burned. Dr. Craighead conducted me on a tour of the hammock and showed me a few fragments of this fern in a single erosion hole—all that remained of the Fragrant Maidenhair!

The final chapter of my Florida experiences takes us once again to the Fahkahatchie Swamp area of the Big Cypress in Collier County. Gene Delchamps and Monroe Birdsey from the University, Ray Glenn, and myself comprised the group driving up from Miami. Along the Turner River, just off the Tamiami Trail, we stopped long enough to look for *Cheiroglossa palmata*, the Hand Fern, and found a few specimens in poor condition on the trunks of the cabbage palms.

Near Copeland we met Leonard Brass, who had driven down from Lake Placid to join us. We entered the cypress swamp somewhat south of the region which I had visited the preceding year, but still in the Royal Palm area. The havoc wrought by Donna was to be seen everywhere. The stately palms were stripped of their former glory and much of the epiphytic vegetation on the trunks had been shorn off—partly by the force of the wind and partly by falling fronds of the trees themselves serving as gigantic shearing knives. In vain I looked for *Polypodium costatum*, the Costate Strap Fern, sparingly in evidence the previous year. Many plants of the rare local form of the

Vanilla Orchid suffered a similar fate, their vine-like fragments hanging in shreds.

Midwinter is the best time of year to visit the Big Cypress, as the water is then at its lowest. We found the general water level about waist deep, but in open places it was well over one's head, necessitating frequent detours. Leonard Brass had with him a valuable Exakta camera, and I a Zeiss Contaflex, both designed for nature photography. Before leaving I suggested that it might be risky taking such expensive equipment into the swamp. He admitted the danger, but went on to say that the important thing was not to fall down. As luck would have it, in a treacherous spot I stumbled over a sunken log, submerging both myself and the Contaflex! Although my recovery was almost immediate, the damage was done and the camera later had to be completely rebuilt at the Zeiss factory. For me the Big Cypress has turned out to be a photographic jinx, since the preceding year I lost an Argus C3 while trying to keep track of four different types of cameras, including a movie outfit.

The highlight of the trip came when we stopped to eat lunch on a small piece of elevated ground surrounded on all sides by water and cypress knees. Not far off we detected the snout of a floating alligator. After his departure we began systematic botanizing in the area, and were delighted to find *Polypodium (Campyloneuron) angustifolium*, the Narrow-leaved Strap Fern, epiphytic on branches of a large Pondapple tree. This was the first time I had seen this fern rarity in its native habitat.

*Asplenium auritum* still proved as elusive as ever and remained undiscovered. Although most of the group had seen it in Big Cypress at one time or another, the locations are hard to pinpoint. Gene Delchamps later wrote that he visited this region in early March when the water was much lower, and found not only *A. auritum*, but more *Polypodium angustifolium* and a large colony of *Ctenitis submarginalis*.

As mentioned in the previous article (Darling, 1961), it is difficult for a visitor with limited time to explore and botanize as thoroughly as he might wish. Any information regarding new

discoveries of Florida rarities will be appreciated greatly by the author.

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 ST. JOHN, EDWARD P. 1943. More About the Distribution of Ferns in Florida. Amer. Fern Journ. **33**: 59-67.

3809 LARNO DRIVE, BUSH HILL WOODS, ALEXANDRIA, VIRGINIA.

**Taxonomic Notes on Ferns, III**

C. V. MORTON

The following two Jamaican ferns, in need of usable names, were brought to my attention by Mr. George L. Proctor, who is at present engaged in writing a fern flora of Jamaica.

*ANOPTERIS HEXAGONA* (L.) Prantl var. **simplicior** Morton, var. nov.

A var. *hexagona* foliis minus compositis, saepe bipinnatis, pinnis 2 basilibus tantum pinnatis, pinnulis paucis saepe tantum 2-jugis, segmentis magis elongatis saepe 2-4.5 cm. longis, pinnis apicalibus simplicibus valde serratis, serraturis saepe 13-20 utrinque latere differt.

Type in the United States National Herbarium, no. 2358069, collected on the interior summit slopes of Dolphin Head, Hanover Parish, Jamaica, on limestone rocks in deep shade, at 1500-1700 feet elevation, April 11, 1955, by George R. Proctor (no. 10023). Isotype presumably in the Institute of Jamaica.

Paratypes (all from Jamaica): Type locality, July 31, 1955, *Proctor 10409* (US); *ibid.*, March 7, 1960, *Proctor 20962* (IJ). Mount Ridgway Road, Windsor, Trelawny Parish, 100-150 m., April 9, 1931, *G. S. Miller 1557* (US). Cockpit country ca. 5 miles north of Quick Step, above Aberdeen Post Office, Trelawny Parish, occasional on moist shaded limestone ledges, March 6, 1950, *Proctor 4117* (IJ).

In its most extreme form this plant seems as though it might be a good species, closely related to *A. hexagona*, but efforts to find adequate distinguishing characters have been unavailing. These large plants cited above are all from the western half of Jamaica in the Parishes of Hanover and Trelawny. Plants of typical *A. hexagona* (as represented in Plumier's plate 37) are common in eastern Jamaica, in the Parishes of Portland, St. Ann, St. Mary, and St. Catherine. They are much smaller in general and more finely divided, being always tripinnate at base, with usually four pairs of compound pinnae and 2 or 3 pairs of simple